



A.D. 1872, 11th JANUARY.

N^o 90.

SPECIFICATION

OF

GEORGE KENT.

SMOKE CONSUMING APPARATUS.

LONDON:

PRINTED BY GEORGE E. LYRE AND WILLIAM SPOTTISWOODE,

PRINTERS TO THE QUEEN'S MOST EXCELLENT MAJESTY:

PUBLISHED AT THE GREAT SEAL PATENT OFFICE,

25, SOUTHAMPTON BUILDINGS, BOLDSTOCK.

1872



A.D. 1872, 11th JANUARY. N^o 90.

Smoke Consuming Apparatus.

LETTERS PATENT to George Kent, of Buckland, in the County of Hants, for the Invention of “**AN IMPROVED ARRANGEMENT OF SMOKE CONSUMING APPARATUS.**”

Sealed the 9th July 1872, and dated the 11th January 1872.

PROVISIONAL SPECIFICATION left by the said George Kent at the Office of the Commissioners of Patents, with his Petition, on the 11th January 1872.

I, GEORGE KENT, of Buckland, in the County of Hants, do hereby
5 declare the nature of the said Invention for “**AN IMPROVED ARRANGEMENT OF SMOKE CONSUMING APPARATUS,**” to be as follows:—

This Invention relates to an improved mechanical arrangement for introducing heated air into the combustion chambers of steam boilers for consuming the smoke and effecting more perfect combustion of the
10 gases formed in the furnaces thereof.

The following are examples of the application of this Invention to marine and land boilers:—In applying it to marine boilers I propose to

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pass tubes for the passage of atmospheric air through the ordinary tubes of a multitubular boiler or through the water space thereof, one end of the said air tubes leading into the combustion chamber and the other end being open to the atmosphere. And as regards land boilers I arrange and pass the aforesaid air tubes through the flues from the 5 furnace into the back of the boiler and along the inner shell thereof, and I so arrange the said air tubes as that one end thereof is opened to the atmosphere and the other end led behind the bridge of the furnace.

The object and intention of this Invention being to so place and 10 arrange air tubes in boilers as that they shall pass down or along the the combustion chamber thereof in order that the said tubes may get so intensely heated that the air in its passage through them shall be thoroughly superheated; and this intensely heated air coming into contact with the smoke and gases as they leave the fire-bars will cause the smoke and gases to ignite and thereby effect consumption of the smoke, and further, in order that a very considerable surface of air tubing may be exposed to the action of the heat in the combustion chamber, I propose to bend or arrange the said tubing in a tortuous or zig-zag direction. 20

SPECIFICATION in pursuance of the conditions of the Letters Patent filed by the said George Kent in the Great Seal Patent Office on the 11th July 1872.

TO ALL TO WHOM THESE PRESENTS SHALL COME, I, GEORGE KENT, of Buckland, in the County of Hants, send greeting. 25

WHEREAS Her most Excellent Majesty Queen Victoria, by Her Letters Patent, bearing date the Eleventh day of January, in the year of our Lord One thousand eight hundred and seventy-two, in the thirty-fifth year of Her reign, did, for Herself, Her heirs and successors, give and grant unto me, the said George Kent, Her special 30 licence that I, the said George Kent, my executors, administrators, and assigns, or such others as I, the said George Kent, my executors, administrators, and assigns, should at any time agree with, and no others, from time to time and at all times thereafter during the term

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therein expressed, should and lawfully might make, use, exercise, and vend, within the United Kingdom of Great Britain and Ireland, the Channel Islands, and Isle of Man, an Invention for “**AN IMPROVED ARRANGEMENT OF SMOKE CONSUMING APPARATUS,**” upon the condition
5 (amongst others) that I, the said George Kent, my executors or administrators, by an instrument in writing under my, or their, or one of their hands and seals, should particularly describe and ascertain the nature of the said Invention, and in what manner the same was to be performed, and cause the same to be filed in the Great Seal
10 Patent Office within six calendar months next and immediately after the date of the said Letters Patent.

NOW KNOW YE, that I, the said George Kent, do hereby declare the nature of my said Invention, and in what manner the same is to be performed, to be particularly described and ascertained in and by the
15 following statement, that is to say:—

This Invention relates to an improved mechanical arrangement for introducing heated air into the combustion chambers of steam boilers for consuming the smoke and effecting more perfect combustion of the gases formed in the furnaces thereof.

20 The following are examples of the application of this Invention to marine and land boilers:—In applying it to marine boilers I propose to pass tubes for the passage of atmospheric air through the ordinary tubes of a multitubular boiler or through the water space thereof, one end of the said air tubes leading into the combustion chamber, and the
25 other end being open to the atmosphere. And as regards land boilers, I arrange and pass the aforesaid air tubes through the flues from the furnace into the back of the boiler and along the inner shell thereof, and I so arrange the said air tubes as that one end thereof is opened to the atmosphere and the other end led behind the bridge of the
30 furnace.

The object and intention of this Invention being to so place and arrange air tubes in boilers as that they shall pass down or along the combustion chamber thereof in order that the said tubes may get so intensely heated that the air in its passage through them shall be
35 thoroughly superheated, and this intensely heated air coming into contact with the smoke and gases as they leave the fire-bars will cause the smoke and gases to ignite and thereby effect consumption of the

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smoke, and further, in order that a very considerable surface of air tubing may be exposed to the action of the heat in the combustion chamber I propose to bend or arrange the said tubing in a tortuous or zig-zag direction.

And in order to explain my said Invention more fully, I now proceed 5 to describe the means by which it may be effected, reference being had to the illustrative Sheet of Drawings accompanying these Presents, and to the numeral figures and letters of reference marked thereon, respectively as follows :—

DESCRIPTION OF THE DRAWING.

10

Figure 1 represents a longitudinal and vertical section of a marine boiler shewing the manner of applying my said improvements thereto; Figure 2 is a transverse and vertical section taken through the line A, B, at Figure 1; Figure 3 is a longitudinal and vertical section of a land boiler shewing my improvements applied thereto; and 15 Figure 4 is a horizontal section through the line C, D, at Figure 3. At each of the above-mentioned Figures similar letters of reference are employed to denote corresponding parts.

A marks the tubes of an ordinary multitubular marine boiler; B, the outer shell or casing; C, fire-bars; D, bridge; E, ash-pit; G, combustion 20 chamber; H, smoke box; I, pipes for conveying superheated air into the combustion chamber G, the end *i* of the pipe I is open to the atmosphere, and the end *k* of the pipe I descends into the combustion chamber G, as represented at Figures 1 and 2.

The Drawing at Figure 2 shews four air pipes I to each furnace; 25 K is the furnace door. The air as it passes through the pipes I becomes superheated, and mixing with the gases from the fuel causes them to be ignited and effect consumption of the smoke, as before stated.

It will be seen upon referring to Figures 3 and 4 which represent a 30 land boiler, that the air pipe I passes through the back end of the boiler into the hollow bridge D, and the pipe I is curved at *l*, and passes along the flue of the boiler, and terminates at *m* in the open air. L marks a pipe, or there may be several sets arranged or disposed in a tortuous or zig-zag direction in the combustion chamber G, when a 35 considerable surface of air-conducting tubing is required to be exposed to the action of the heat from the furnace.

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The combustion chamber G, at Figures 3 and 4, terminates in a chimney shaft not shewn by the Drawing.

It will appear obvious that in applying these improvements to Cornish boilers, for example, constructed with two tubes, each tube may
5 be similarly fitted with air pipes to that lastly described with reference to Figures 3 and 4.

I would remark that the pipes I and L may be made of cast or wrought-iron, or fire-clay, as may be found most desirable.

Having now fully described and set forth the nature and object of
10 my said Invention for "An Improved Arrangement of Smoke Consuming Apparatus," together with the means by which it may be effected, I would remark in conclusion that I hereby declare my Invention to consist in, and I claim, the manner above described and represented of arranging and operating with pipes for introducing
15 superheated air into the combustion chambers of marine and land boilers for effecting consumption of smoke, as above stated.

In witness whereof, I, the said George Kent, have hereunto set my hand and seal, this Ninth day of July, in the year of our Lord One thousand eight hundred and seventy-two.

20

GEORGE KENT. (L.S.)

LONDON:

Printed by GEORGE EDWARD EYRE and WILLIAM SPOTTISWOODE,
Printers to the Queen's most Excellent Majesty. 1872.

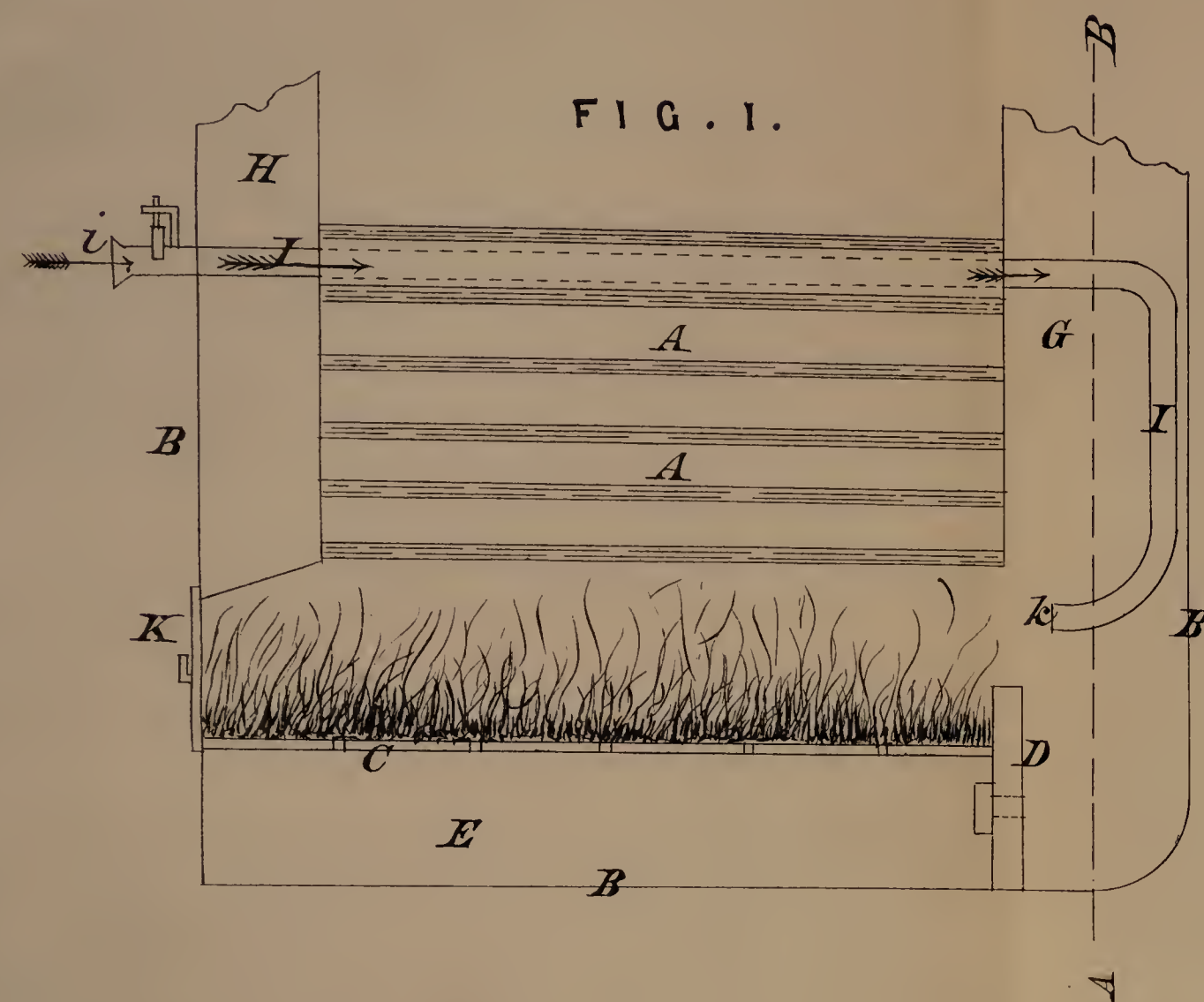


FIG. 2.

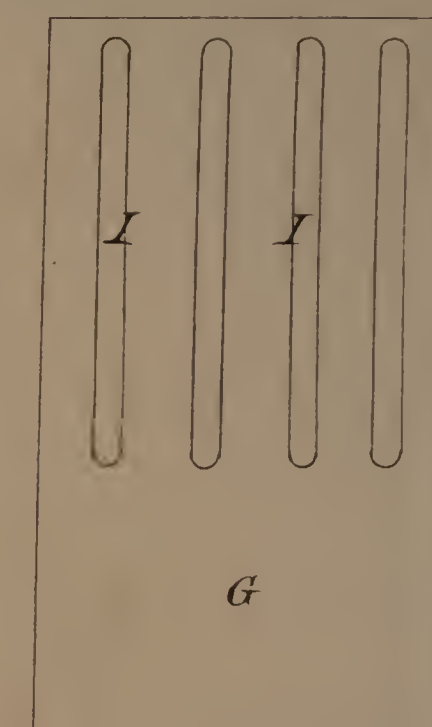


FIG. 3.

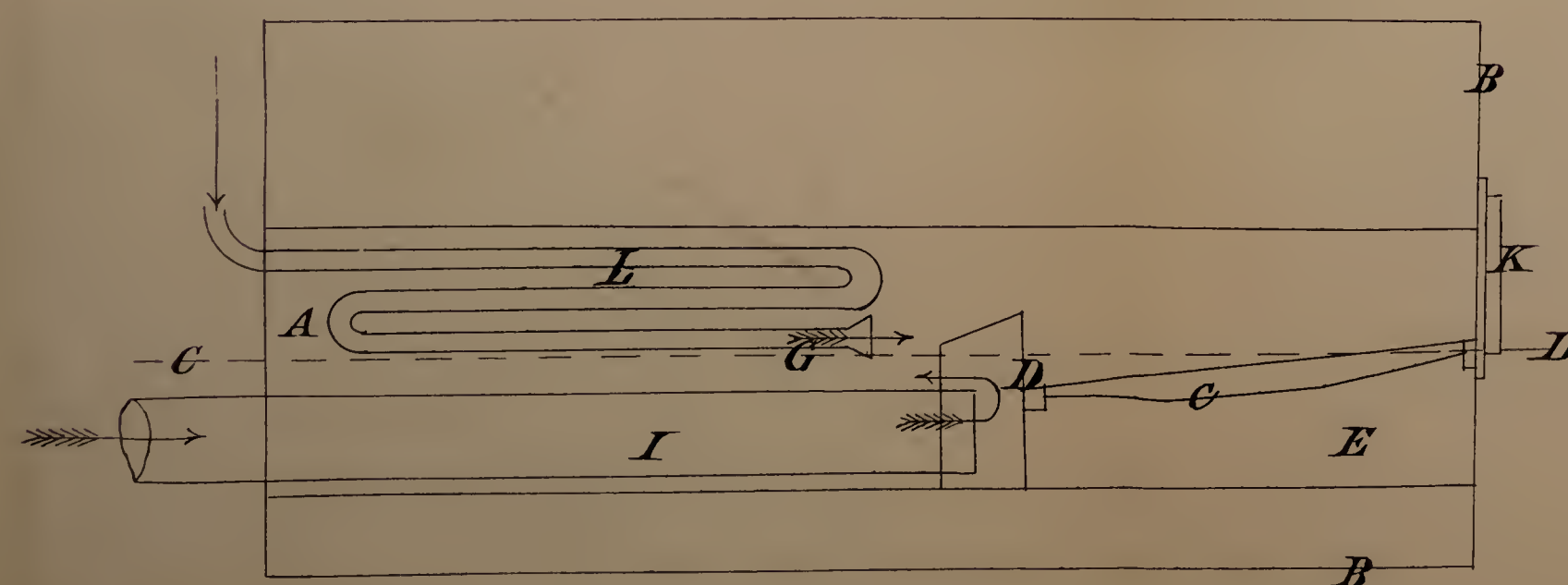
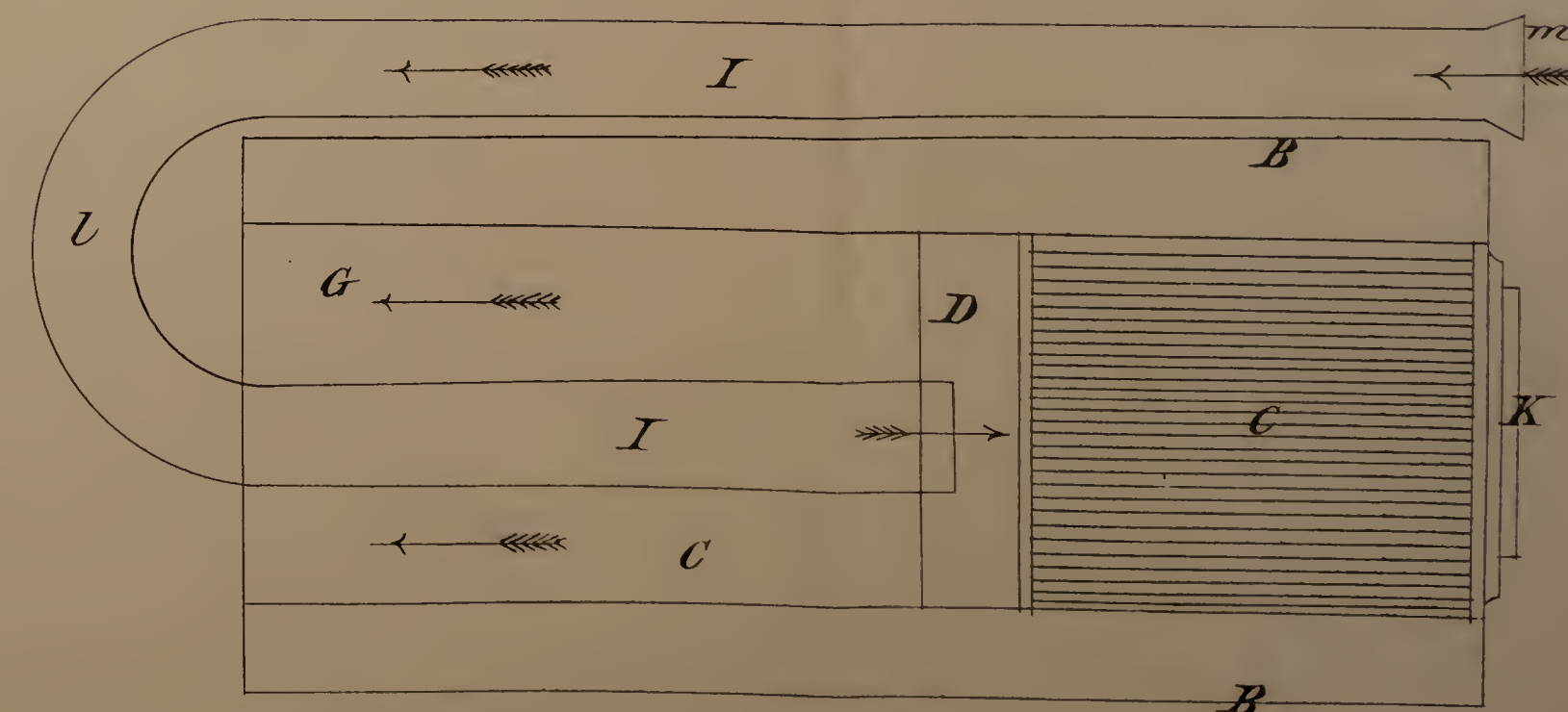


FIG. 4.



The filed drawing is not colored.

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